SENSORS FOR SEISMIC TESTING AND INFRASTRUCTURE MONITORING

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SENSORS FOR SEISMIC TESTING

PCB® and Endevco® offer a diverse portfolio of sensors used for smart infrastructure worldwide, designed to measure earth tremors, foot, automobile and bridge traffic, trains and other seismic events that impart low frequency vibration. These vibratory loads accumulate as stress and may degrade the structures built to support them. Smart infrastructure includes active measurement with real-time data logging that informs operators on structural integrity, critical during unforeseen loading scenarios.

Typical testing applications include:

- Foundation, floor vibration, and security monitoring
- Earthquake detection
- Structural testing of bridges and foundations
- Process monitoring inside machinery that is susceptible to low level vibration

LOW FREQUENCY, HIGH OUTPUT ICP® ACCELEROMETERS

PCB® supports advancements in sensor technology to take low frequency measurements to micro-g levels with ICP® accelerometers. Permanently installed, high-output accelerometers can be mounted to bridges, walkways, highways, buildings, and other large structures to capture important trending data and aid engineers in evaluating structural integrity.

SPECIFICATIONS						
Model Number	**PCB 393A03**	**PCB 393B04**	**PCB 393B32**	**PCB 393B12**	**PCB 393B05**	**PCB 393B31**
Description	Seismic, ceramic shear ICP® accelerometer	Seismic, miniature, ceramic flexural ICP® accelerometer	Seismic, high sensitivity, ceramic flexural ICP® accelerometer	Seismic, high sensitivity, ceramic shear ICP® accelerometer	Seismic, miniature, ceramic flexural ICP® accelerometer	Seismic, high sensitivity, ceramic flexural ICP® accelerometer
Measurement Range	±5.0 g pk	±5.0 g pk	±1.0 g pk	±0.5 g pk	±0.5 g pk	±0.5 g pk
Sensitivity	1.0 V/g	1.0 V/g	5.0 V/g	10 V/g	10 V/g	10 V/g
Frequency Range	0.5 to 2,000 Hz	0.06 to 450 Hz	0.2 to 200 Hz	0.15 to 1,000 Hz	0.7 to 450 Hz	0.1 to 200 Hz

Learn more about infrastructure testing and monitoring with PCB.

Learn more about infrastructure testing and monitoring with Endevco.

MEMS DC RESPONSE ACCELEROMETERS

MEMS DC response accelerometers are designed to measure low-frequency vibration and motion and are offered in full-scale ranges from ± 2 to ± 200 g to accommodate a variety of testing requirements. These accelerometers feature gasdamped, silicon MEMS sensing elements for uniform, repeatable performance and offer high frequency overload protection.

Electrically, the units offer a single-ended or differential output signal with power, signal, and ground leads for each channel. Supply voltage regulation permits operation from +5 to +32 VDC and the low-noise, low-impedance output signal may be transmitted over long cable lengths without degradation. Angular rate sensors offer the capability to measure rotational acceleration in small package sizes. The Endevco® Model 7360A is a six-degrees of freedom sensor that features three DC accelerometers and three angular rate sensors packaged in a compact enclosure. This 6DOF sensor is designed for testing in harsh shock and vibration environments requiring accurate measurement of accelerations and angular velocity.

SPECIFICATIONS				
Model Number	**PCB 3741F series**	**PCB 3713F series**	**Endevco 7310A Series**	**Endevco 7360A Series**
Description	MEMS Differential DC response accelerometer (single axis)	MEMS Single ended DC response accelerometer (triaxial)	MEMS angular rate accelerometer	Six-degrees of freedom (6DOF) sensor
Measurement Range	±2 to ±200 g	±2 to ±200 g	±100 to ±18k deg/sec	Accelerometer: Seven range options from ±2 to ±500 g Angular Rate: Seven range options from ±100 to ±18k deg/sec
Sensitivity	1.0 V/g	1.0 V/g	10 V/g	Accelerometer: Five sensitivities from 1000 to 4 mV/g Angular Rate: Five sensitivities from 20 to 0.111 mV/deg/sec (±15%)
Frequency Range	13.5 up to 1350 mV/g	6.75 up to 675 mV/g	Measured in mV/deg/sec	4 to 1000 mV/g
Frequency Response	0 to 1500 Hz	0 to 1500 Hz	0 to 2000 Hz	Accelerometer: From 0-550 to 0-5000 Hz (±3dB, ref 100 Hz) Angular Rate: 0 to 1 kHz or 0 to 2 kHz (+1dB/-3dB)
Key Features	Ideal for low-frequency vibration and motion with stable performance over the entire operational temperature range	Ideal for low-frequency vibration and motion with stable and accurate measurement in the most severe operating environments	Ideal for reliable sensing performance even under excessive shock and vibration environments	Ideal for harsh shock and vibration environments requiring accurate measurement of accelerations and angular velocity

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